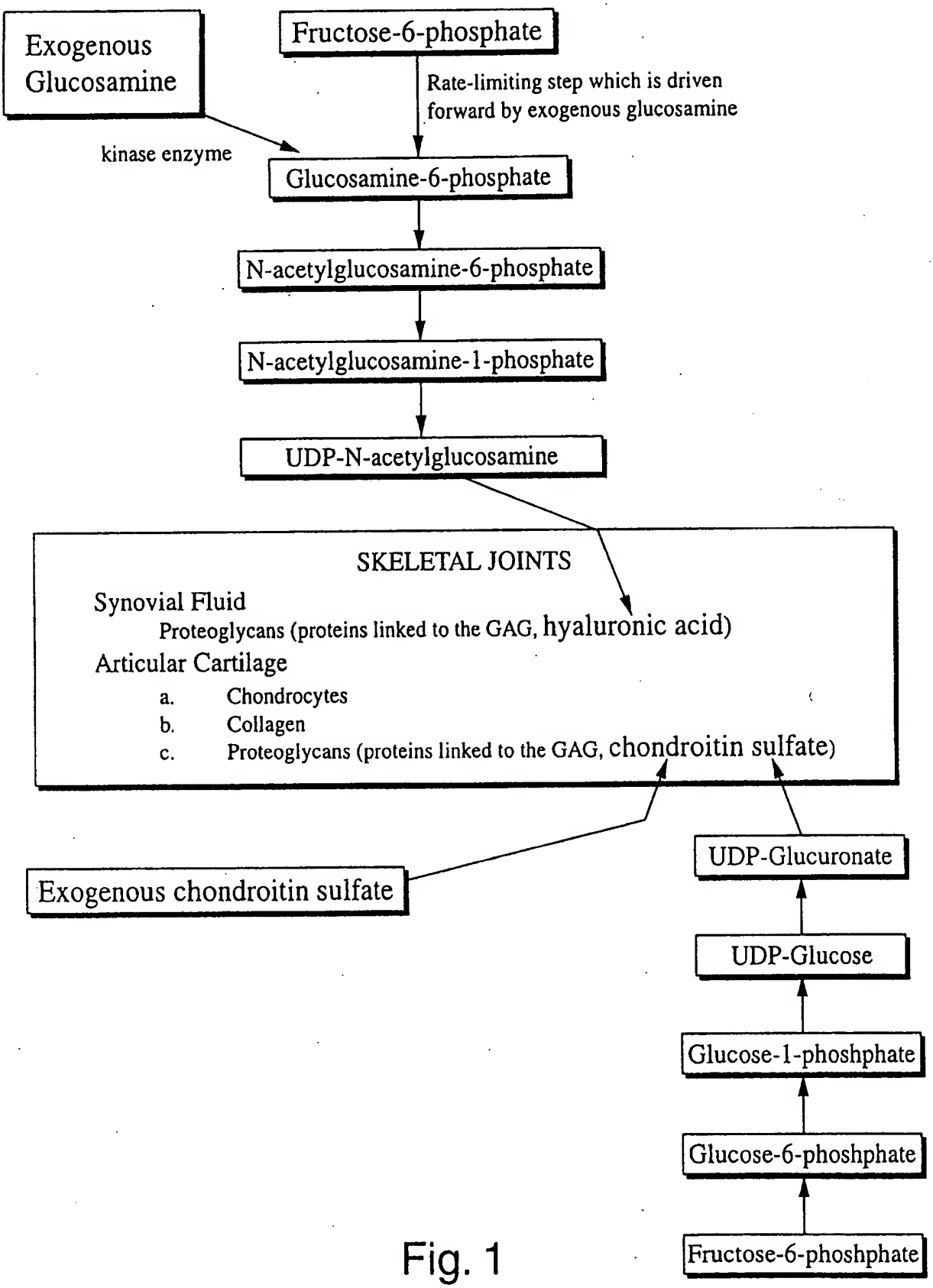
Exogenous Glucosamine
Fructose-6-phosphate
Rate-limiting step which is driven forward by exogenous glucosamine
kinase enzyme
Glucosamine-6-phosphate
N-acetylglucosamine-6-phosphate
N-acetylglucosamine-1-phosphate
UDP-N-acetylglucosamine
SKELETAL JOINTS
Synovial Fluid
Proteoglycans (proteins linked to the GAG, hyaluronic acid)
Articular Cartilage
a. Chondrocytes
b. Collagen
c. Proteoglycans (proteins linked to the GAG, chondroitin sulfate)
Exogenous chondroitin sulfate
UDP-Glucuronate
UDP-Glucose
Glucose-1-phoshphate
Glucose-6-phoshphate
Fructose-6-phoshphate

Fig. 1

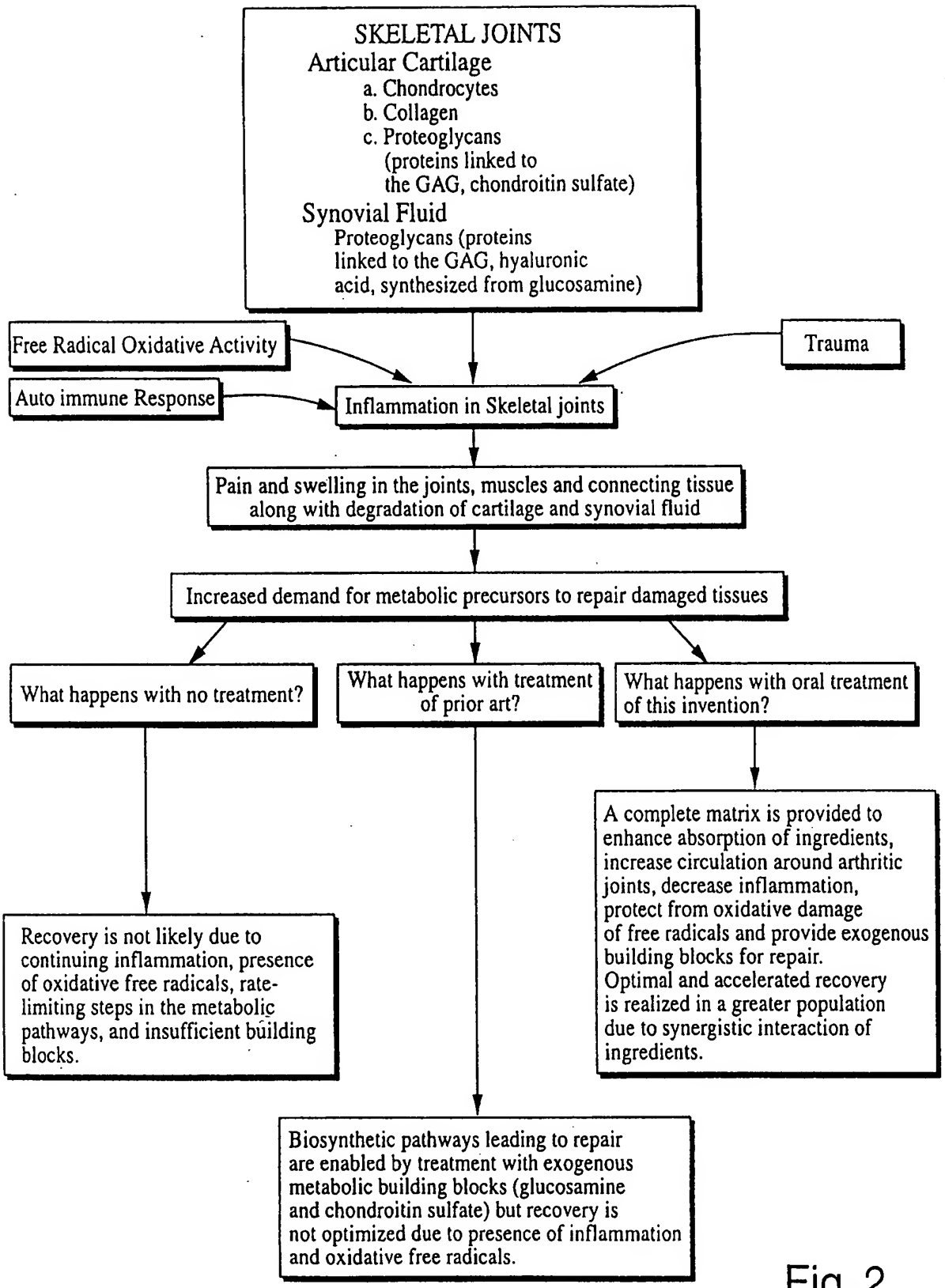
SKELETAL JOINTS
Articular Cartilage
a. Chondrocytes
b. Collagen
c. Proteoglycans
(proteins linked to
the GAG, chondroitin sulfate)
Synovial Fluid
Proteoglycans (proteins
linked to the GAG, hyaluronic
acid, synthesized from glucosamine)
Free Radical Oxidative Activity
Trauma
Auto immune Response
Inflammation in Skeletal joints
Pain and swelling in the joints, muscles and connecting tissue along with degradation of cartilage and synovial fluid
Increased demand for metabolic precursors to repair damaged tissues
What happens with no treatment?
What happens with treatment of prior art?
What happens with oral treatment of this invention?
Recovery is not likely due to continuing inflammation, presence of oxidative free radicals, rate-limiting steps in the metabolic pathways, and insufficient building blocks.
A complete matrix is provided to enhance absorption of ingredients, increase circulation around arthritic joints, decrease inflammation, protect from oxidative damage of free radicals and provide exogenous building blocks for repair. Optimal and accelerated recovery is realized in a greater population due to synergistic interaction of ingredients.
Biosynthetic pathways leading to repair are enabled by treatment with exogenous metabolic building blocks (glucosamine and chondroitin sulfate) but recovery is not optimized due to presence of inflammation and oxidative free radicals.

Fig. 2

Active			Placebo		
ID #	Symptoms	Days	ID #	Symptoms	Days
14346	2		87917	0	
59516	2		63863	1	
26504	7		92420	0	
44407	1		61657	0	
85922	1		43972	2	
33787	1		71408	2	
98275	1		81837	0	
77921	3		10281	1	
59089	9		87025	0	
940904	1		53458	0	
24878	1		37949	3	2
82466	1		47070	1.5	4
10573	2		58588	0	
89534	2		19885	0	

Relief of symptoms
t-Test: Two-Sample Assuming Equal Variances

	Variable 1	*Variable 2*
Mean	3.759259259	1.15625
Variance	11.71866097	2.257291667
Observations	27	16
Pooled Variance	8.257184395	
Hypothesized Mean Difference	0	
df	41	
t Stat	2.871225927	
P(T<=t) one-tail	0.00322131	
t Critical one-tail	1.682878974	
P(T<=t) two-tail	0.00644262	
t Critical two-tail	2.01954208	

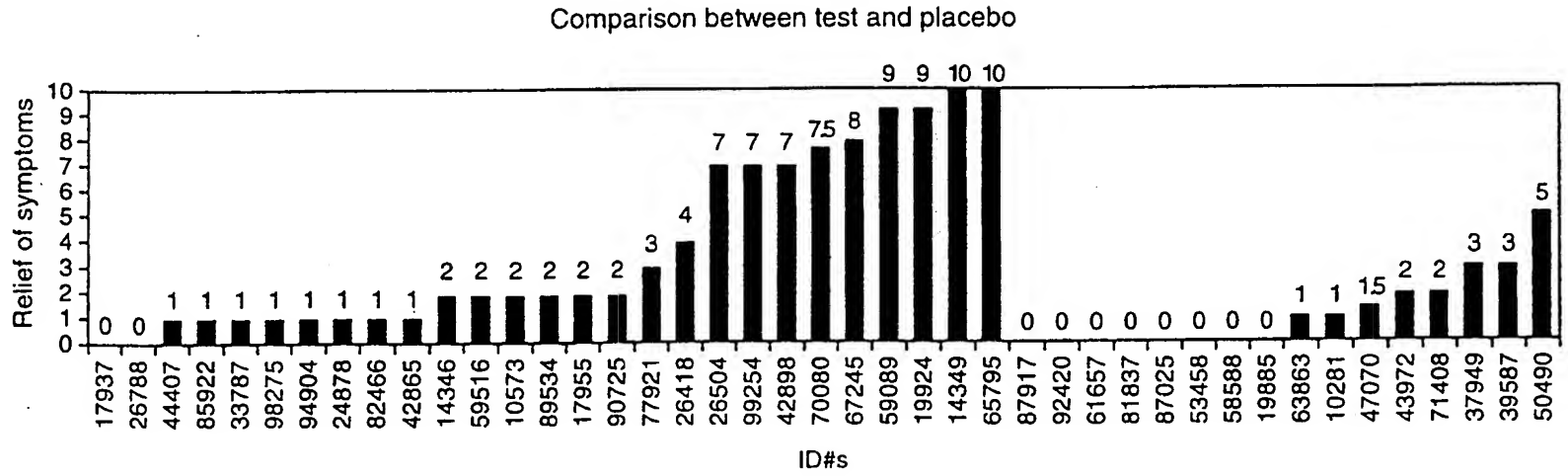

Fig. 3